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to see what is really needed on a canvas a house-light is absolutely necessary, as one can work only from one to two hours on any picture, and do it well."

This painter of the woods maintains that autumn is the best time for work. If cold, one can put up a tent, heat stones and pile them about, putting the feet on the largest, and so keeping up a good circulation.

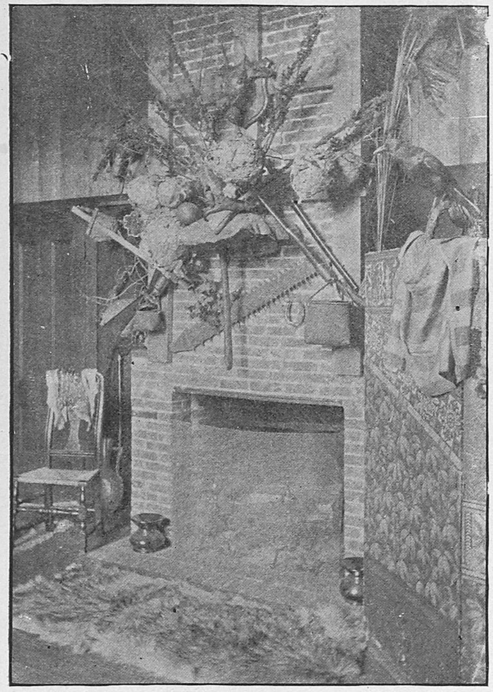
On rainy days, when in the Adirondacks, Mr. Shurtleff carries a small sheet, which he doubles over a big umbrella, and then paints for hours without discomfort.

The wide piazza is one of the features of the house. It is well furnished with rugs, chairs, hammocks and small tables. The yellow cushions which show from the front are, in a way, one of the landmarks of the Shurtleff home. It is the tea place, in the afternoons, for all guests and all friends.

Shirecliffe has now for some years been the show place in Keene Valley, and as many as fifty people are charmingly entertained there a day by the pretty wife of the artist, who go away delighted to have had the opportunity of seeing these artistic wood gems.

Mr. Shurtleff has lately sold one of his great pictures, "The Silent Woods," to the Metropolitan Museum, while another, "The Autumn Woods," has found its way to the Springfield Art Museum.

When in the city, their studio, in Twenty-second Street, is opened to the public on the afternoons of Tuesday and Saturday, where the artist's charming wife bids always a welcome to all. It is an artistic suite of rooms—the centre one being the workshop of this painter of the woods.



The Studio Mantelpiece.

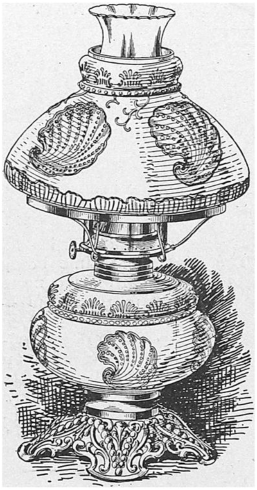
DEVELOPMENT OF THE MODERN LAMP.

By Edward C. Weaver.

OUR modern lamp has had two eras of its existence—that in which it was fed with a fixed or animal oil or fat, and the present era of mineral oil or kerosene. And I am now reminded that it is food for thought that it was as late as 1853 that a Dr. Brewer, of Pennsylvania, first suggested the use of rock-oil for illuminating. The oil of that time being found in certain natural springs. A year or two more and boring for oil was tried, and now petroleum practically lights the world.

To go back to the beginning of the older era of modern lamps. To begin, in fact, where the old Roman type left off, and were little more than oil chambers with orifices in which an absorbent wick was inserted. The "cruise" used until very late years in the Highlands of Scotland is one of these lamps, a pioneer of the class. As the wick was merely a cord of loosely-plaited material, it burned in an incomplete manner. The admission of air was not sufficient to completely burn the gases generated from the oil, this causing both a smoking of the unconsumed carbon and the emanation of certain acrid gases produced by the distillation of fatty substances. This feature was the first one to impress itself upon the mind of the inventor, and in 1783 M. Leger, of Paris, brought into use the flat wick, which, from its form, gave an increased access of air, and, consequently, a more perfect combustion. It was found, however, after a short use of this form of wick, that there was a great defect in the flat form of flame in that it gives a very meagre light at its ends. Leger remedied this by giving a crescent form to the ribbon wick. Ami Argand, a physician and chemist of Geneva, ingeniously brought the edges of the ribbon wick together, thus forming the tubular wick which bears his name to this day. This was done in 1784. Argand devoted much of his life to the improvement of lamps. While the first tubular wick was quite a success as far as it went, his younger brother, entirely by accident, hit upon the use of a tubular glass chimney to increase the natural draft of the flame-cone. A narrowing of the body of this chimney in close proximity to the flame completed Argand's inventions, this contraction operating to throw the air of the outer draft into the flame. Poor Argand soon became involved with his lamp with one Lange, of Paris, and, to avoid lawsuits and ruin, joined in with him and secured French Letters Patent for a term of fifteen years. But at this time the revolution came on and carried the promising monopoly down into the vortex of general ruin. It may be said that Argand died of a broken heart, for his end was a sad one.

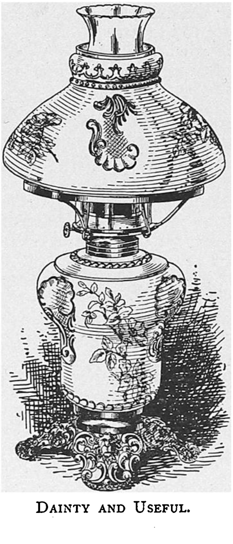
The argand lamp, however, was ushered into the new century with little improvement, if we except the Liverpool button, which came from no one knows where, but was probably first used in that city, as its only heritage is its name. This button is the flat button placed at the top of the inner argand tube, and has for its purpose the deflecting of the air current directly into the flame. It is to be remembered that lamps of this period burned a heavy animal oil, which was thinned somewhat by the heat of the near burning flame. For this reason, it will be seen the flame must needs be close to the surface of the oil, otherwise it would not rise freely in the wick by the capillary attraction. The next step of invention was prompted by this fact.



A Modern Table Lamp.

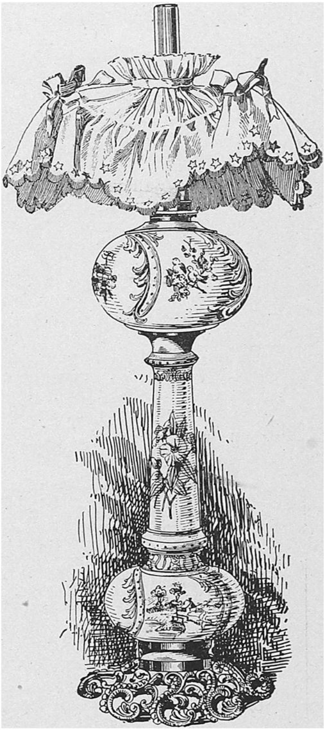
M. Carcel, about 1802, invented and brought into use a clock-work attachment by which the oil was mechanically raised to the wick in a small but continuous stream. As it was an expensive device and one easy to get out of repair, it did not come into a very general use. The "moderator lamp," invented by M. Franchot in 1836, seems to have been a far simpler mechanism and more popular than its predecessor. In this lamp the oil chamber was fitted with a piston-head, actuated downwards by a spiral spring. Through the piston-head and reaching to the burner was a slender tube in several telescopic sections, the smaller at the bottom. It will be readily understood that the spring forcing the piston downward injected a stream of oil through the tube to the burner. Now, it would naturally occur that, the spring being stronger at its initial position, the flow of oil at the beginning would be greater than at the end. This was regulated by the insertion of a wire body into the depending tube, which stopped the smaller tube more than the succeeding sections, this being, in fact, the "moderator," which gives name to the lamp.

In 1834 the Englishman Young introduced his Vesta lamp, burning camphine, and for many years thereafter the special oil lamps were very popular. These oils were made so light that the capillary attraction of the wick was ample to raise them to the burner. The German lamp followed into general use about 1850, being the flat-wick type, with ratchet wheel to raise and lower it. The brass-cap burner was also used in this lamp, being so formed as to throw the air current into the cone of light, and at once to prevent the heat from reaching below to any extent, a very necessary precaution in those days when a light and dangerous oil was in common use.



Dainty and Useful.

In America the development of the oil lamp is perhaps best studied by taking a look over the records of the Patent Office and seeing what inventors have done. I wonder if there are any of my readers who have the slightest idea of the volume of invention relating to the apparently small subject of lamps? Every application for a patent in this line goes to a single division of the Patent Office, which division is under the charge and control of Principal Examiner Woodward. Mr. Woodward has under him a number of assistant examiners, and in his division there is, besides lamps and gas appliances, the classes of lynotypes, matrix-making optics and typewriters.



A Banquet Lamp.

Take the class of lamps alone. There are in the sub-class of lamp attachments 27 patents; lamp boxes, 25; lamp burners, 781; Argand burners, 129; multiple wick, 73; lamp-lighting attachments, 74; plain lamps, 60; bicycle lamps, 24; bracket lamps, 35; carriage lamps, 30; independent reservoir lamps, 324; forced-draft lamps, 68; no-chimney lamps, 106; special lamps, 91; street lamps, 157; lamp founts, 41; chimney holders, 33; chimneys, 172; extinguishers, 261; harps and hangers, 302; lanterns, 963; oil fillers, 55; pedestals, 52.

Added to this list will be a number of miscellaneous patents not found in the classes given. Now, I think a sum total of nearly four thousand patents makes a pretty respectable showing for such a minor device as a lamp. It reflects great credit upon the American ingenuity that it can find anything at all new in the art in the face of this array.

Among the first two thousand patents issued by our Government, and of which there is now a record—and this means something, for in 1836 a great fire destroyed the records of all previous work—there was one upon a lamp.

In the lamp proper there has not been a very marked march of improvement, with the exception, of course, of the burners.

The Argand type is still of greatest value, and probably the greatest improvement has been the slide device for raising and lowering wicks. Lately the incandescent principle has been attempted with oil fuel, but so far cannot be said to be a success.

The porcelain cap is probably the greatest departure, and depends upon the reflective power of white porcelain for an increase of illuminating power, and not to incandescence.

(*Completed next month.*)